

## Response from Dr. Jonas

I certainly appreciate Dr. Regna's views. Both the sin theory and the "it's-their-own-fault" theory are, unfortunately, operative in our society. They are indeed two sides of the same coin, e.g., some observers of the poor will combine the two: "it's their own fault, they have thus sinned, and they are being punished for their sin." Those of us who believe in the Declaration of Independence and the Bill of Rights must indeed fight on several different ideological fronts, being sure while doing it not to denigrate the efforts of any of the enemies of the reactionaries.

Steven Jonas, MD  
University of New York at Stony Brook

## Physical Quality of Life and the Political-Economic System

In their recent article,<sup>1</sup> Cereseto and Waitzkin made two statements: a) there is a strong correlation between wealth and physical quality of life (PQL); and b) political-economic system is a strong predictor of almost all PQL variables. The first conclusion is widely accepted<sup>2</sup> while the second one raises some doubts and does not seem to be based on solid ground.

The authors classified all countries, both socialist and capitalist, in several groups according to GNPs (gross national products). Although the mean of GNP in the same category of income is similar, the range of GNP varies markedly and is not the same in capitalistic and socialistic countries. For example, more than 30 per cent of low-income capitalistic countries have GNP lower than China, which is the only representative of low-income socialistic countries.<sup>3-4</sup>

In addition, and as mentioned by the authors, any conclusion made on comparison between one socialistic country and a group of extremely poor countries is more than tentative. (It should be mentioned here that some of the latest claim themselves as socialistic and the definition of socialistic and capitalistic countries is very vague in many instances.) The problem increases when we approach the lower middle-income countries. On one side in many ways we have four completely different countries: Cuba, Mongolia, South Korea, and Albania with the GNP ranging between \$780-1410. On another side, we have a large group of

capitalistic countries, half of them tropical countries with their specific hazards for health conditions, and with a GNP lower than \$700, i.e., lower than the poorest GNP of the countries mentioned above (Mongolia \$780).<sup>2</sup>

From our point of view, the most inappropriate comparison is between upper-middle income countries and the socialistic countries group consisting of eight European countries, all of which, except the USSR, enjoy favorable climate conditions, and at least three of the eight countries were highly developed industrial countries before World War II with a comparatively high standard of living (Czechoslovakia, Hungary, East Germany). The capitalistic countries group is a strange mixture of obviously different subgroups: Middle-East and Arab countries, Latin-American countries, and less prosperous European countries. The clustering of so many different countries who vary in many ways into one group is too frivolous and means of the GNP and PQL of such a group does not make sense.

The authors compare different countries, which are not at similar levels of economic development and ignore too many extremely important factors, thus their conclusion that socialist countries at large "do better" as health providers for their population is not valid.

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Y. Zilberg, MD, MScCM  
Central Emek Hospital, 18101, Afula, Israel

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## Body Mass Indices and Body Adiposity

Revicki and Israel,<sup>1</sup> based on correlations between the four body mass indices (BMI) and measures of adiposity, suggest that the Quetelet index ( $W/H^2$ ) and the Benn index ( $W/H^P$ ) are preferable as indicators of body fat because: 1) these measures have highest correlations with hydrostatic measures of body fat; and 2) these measures are not correlated with height whereas

the other two are. The correlations (and confidence intervals) of the four BMIs with body fat measures reported in the paper are too close to each other to attach any meaning to the differences. The authors' inference about a difference in correlation between the various BMIs and height appears to be unwarranted on theoretical grounds. The argument goes as follows: Let  $M_1 \equiv W/H$ ,  $M_2 \equiv W/H^2$ ,  $M_3 \equiv W/H^3$ , and  $M_4 \equiv W/H^P$ . Then, according to the authors' calculations,  $\text{Corr.}[M_1, M_4] = .98$ ,  $\text{Corr.}[M_1, H] = .19$ ,  $\text{Corr.}[M_4, H] = -.01$ . Similarly,  $\text{Corr.}[M_3, M_2] = .98$ ,  $\text{Corr.}[M_3, H] = -.24$ ,  $\text{Corr.}[M_2, H] = -.03$ . It can be shown analytically that if  $\text{Corr.}[X, Y] \sim 1$ , then  $\text{Corr.}[X, Z] \sim \text{Corr.}[Y, Z]$  for any  $Z$ . Thus, in view of an (almost) perfect correlation between  $M_1$  and  $M_4$ , and  $M_3$  and  $M_2$ , it is hard to conclude that  $M_1$  and  $M_4$  or  $M_3$  and  $M_2$  are differentially correlated with height.

There seems to be a misgiving that the BMIs should be highly correlated with each other simply because they are functions of the same variables. To quote from Lee and Kolonel,<sup>2</sup> "Since all four BMIs are functions of body weight and height, they were expectedly highly correlated." The fact that two variables are functions of the same entities does not imply that they will be highly correlated. For example, it is well known that if  $Z_1 = X + Y$ ,  $Z_2 = X - Y$  and  $\text{Var.}(X) = \text{Var.}(Y)$ , then  $Z_1$  and  $Z_2$  have zero correlation. Moreover, if the various BMIs are known *a priori* to be highly correlated, what is the point of formulating different transformations of weight and height in devising useful indices?

Weight and height can be easily measured in epidemiological studies. It is therefore obviously desirable to use a BMI as a surrogate for body fat. The issue of interchangeability, or lack of it, of the various BMIs is an important one. There is no reason to conclude from the work of Revicki and Israel<sup>1</sup> that one BMI is better than another. It may well be that simple correlation analysis is inappropriate in the present context. Perhaps more sophisticated statistical analyses can shed some light on this subject.

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